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meredith p. king
meredithpaigeking@yahoo.com

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EVALUATING SKINNER'S VERBAL OPERANTS: APPLICATION WITHIN AND
BEYOND THE PUBLISHED LITERATURE

by

Meredith King

B.S., Southern Illinois University, 2006

A Research Paper

Submitted in Partial Fulfillment of the Requirements for the
Masters of Science Degree

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in the Graduate School
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RESEARCH PAPER APPROVAL

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A Research Paper Submitted in Partial

Fulfillment of the Requirements

for the Degree of

Masters of Science

in the field of Behavior Analysis and Therapy

Approved by:

Dr. Mark Dixon

Graduate School
Southern Illinois University Carbondale
7/8/2011

AN ABSTRACT OF THE RESEARCH PAPER OF

MEREDITH KING, for the Master of Science degree in Behavior Analysis and Therapy, presented on 8th day of July 2011, at Southern Illinois University Carbondale.

TITLE: EVALUATING SKINNER'S VERBAL OPERANTS: APPLICATION WITHIN AND BEYOND THE PUBLISHED LITERATURE

MAJOR PROFESSOR: Dr. Mark Dixon

The present paper analyzes and discusses the many current and past applications for Skinner's verbal operants in our natural environment. This review identifies gaps in the application of Skinner's verbal operants and discusses many future implications that can be studied in order to fill the large gaps of research.

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CHAPTER 1

INTRODUCTION

B.F. Skinner wrote his book *Verbal Behavior* in the year 1957 to measure and evaluate the function of verbal behavior. Skinner (1957) defines verbal behavior as, "...behavior reinforced through the mediation of other people..."(p.2) Skinner defines his unit of verbal behavior, the verbal operants, as a class of responses of identical form functionally related to one or more controlling variables(ie: discriminated stimulus, reinforcement, among various other responses). "...The 'listener' must be responding in ways which have been conditioned previously in order to reinforce the behavior of the speaker (by the verbal community)...," (p.225). Skinner focused on the environmental events occurring prior to and contingent on the verbal response of the individual. He stated that the use of verbal behavior by the speaker was being maintained by the consequences of the listener. These units of verbal behavior (verbal operants) are defined by stimuli that evoke it as well as the consequences that maintain. The echoic, mand, tact, and intraverbal operants represent the elementary verbal relations of which more difficult types of verbal behavior are shaped (Sundberg & Michael, 2001).

CHAPTER 2

PREVIOUS RESEARCH

MANDS

Skinner (1957) defines a mand as “a verbal operant in which the response is reinforced by a characteristic consequence and is therefore under the functional control of relevant conditions of deprivation or aversive stimulation”(35). The greatest number of citations in verbal behavior has been on the verbal operant, mand. Dymond et al (2006) found that of the 101 empirical articles, 63 mentioned mands (ie: Braam and Sundberg, 1991; Goh et al 2000; Lamarre and Holland 1985; Chambers and Rehfeldt 2003; DeLeon et al 2000; Derby et al. 1998; Marcus and Vollmer, 1996;Ewing et al. 2001; Peck et al 1996; Richman et al. 2001; Sprague and Horner 1992; Sundberg et al 2001; Tiger and Hanley 2004; O'Neill et al, 2000; Yamamoto and Mochizuki 1988. A study conducted by Sundberg et al., (2002) investigated a procedure to teach the mand for information of “where?” to children with autism by contriving situation and an establishing operation for the location of a missing item. Following acquisition of a mand, an establishing operation for a specific person was contrived to teach the specific mand for information of, “who?” These results showed the children acquired these mands when the relevant establishing operations were manipulated and these children were able to generalize these new mands to various untrained items in a natural situation in their natural environment.

TACTS

According to Skinner (1957), a tact is defined as “ a verbal operant in which a response of given form is evoked (or at least strengthened) by a particular object or event or property of an object or event”(81). Dymond et al (2006) found that of the 101 articles, 34 mentioned tacts.(ie: Baer and Detrich, 1990; Barnes-Holmes et al. 2001; Carroll and Hesse, 1987; Potter et al, 1997; Henry and Horne 2000;Woods 1984) Partington et al (1994) conducted a study on the verbal operant of tacts using a six year old child with autism who was non vocal as their participant. This child had already acquired over 30 signs as mands, intraverbals, and echoics. When she was presented with the verbal stimuli of “What is that” she tacted “ball” for every object she was presented with. This study included 18 items and three phases of actual objects and pictures to determine that the verbal stimulus of “What is that?” blocked the establishment of stimulus control by nonverbal stimuli. After removing the blocking verbal stimulus, enhancement of the verbal stimulus, and differential reinforcement this child was able to transfer stimulus control from imitation (echoics) and intraverbal stimuli to nonverbal stimuli and she was able to learn to tact all of the 18 stimuli she was presented with.

ECHOICS

Skinner defines an echoic operant as “...verbal behavior...under the control of verbal stimuli in which the response generates a sound-pattern similar to that of the stimulus...”(p.55) The echoic is a verbal operant that is under the stimulus control of a preceding verbal stimulus, maintained by generalized

reinforcement. This operant has point- to-point topographical correspondence to the preceding stimulus. Dymond et al (2006) found that of the 101 empirical articles 15 mentioned echoics (ie: Charlop and Trasowech, 1991; Finkel and Williams 2001; Duker et al, 1993; Eikeseth and Nasset 2003; Hersh, 1990; Lodhi and Greer, 1989; Miguel et al, 2001; Sundberg et al; 1996). Eikeseth and Nasset's (2003) work on echoic behavior with children who have a phonological disorder demonstrated that great response- exemplar training of vocal imitation training can produce major gains in articulation skills that will maintain, generalize, and transfer to other phonemes in a natural situation and natural environment.

INTRAVERBAL

The intraverbal, is a verbal operant that is under the stimulus control of a preceding verbal stimulus, without point- to- point correspondence, and is maintained by generalized reinforcement. On page 71 of Skinner's Verbal Behavior he defined the intraverbal as a type of verbal behavior controlled by a verbal stimulus (the product of someone else's verbal behavior) in which there is no point-to point correspondence between the stimulus and the response.

Intraverbal behavior is a critical part of many important aspects of human behavior such as intellectual behavior, memory, social interactions, thinking, problem solving, creativity, academic behavior, history, and entertainment. For several decades the focus of research has been on procedures for teaching intraverbals to individuals with typical and non typical developing children and adults (e.g., Braam & Poling, 1983; Luciano, 1986; Partington & Bailey, 1993;

Watkins, Pack-Teixeira, & Howard, 1989). Dymond et al (2006) found that of the 101 empirical articles, 25 of the articles mentioned using intraverbals. (ie: Chase et al, 1985; Kahng et al, 2000; Lalli et al, 2000; Luciano, 1986; Partington et al, 1994; Watkins et al 1989).

Petursdottir et al. (2008) evaluated the results of vocal intraverbal training and listener training on the emergence of brand new categorization skills. This investigation included five typically developing preschool children who initially learned to tact a variety of new stimuli and then received either intraverbal training or listener training. A multiple baseline design was utilized to evaluate and demonstrate the effects of this training on each child's intraverbal category naming and stimulus selection in a Pre and Post test format. These tests demonstrated that four of the five participants didn't demonstrate emergence of any untrained relations, however, all of the trained relations using intraverbal training were quickly learned. Ingvarsson et al, (2007) examined the behavior of four atypical and typical preschool children. The children in this study often responded to questions inappropriately during baseline and this was demonstrated during the pre-test. These children were taught the intraverbal responses of a) "I don't know" (IDK), and b) "I don't know, please tell me" (IDKPTM). Results in this study demonstrated that all three children were able to not only utilize the "I don't know, please tell me" response, but by using this response they were able to learn the correct answers to the previously unknown questions and generalize those answers to natural situations and environments.

Ingvarsson and Hollobaugh (2010) extended Ingvarsson et al, 2007's study by demonstrating successful acquisition of teaching four boys with autism to mand for information to answers to each question by saying, "I don't know please tell me." In this study all four children learned to say "I don't know please tell me", and two of the children learned correct answers to most previously unknown questions. Additional training was needed for one child, but results were generalized for all four children. Braam & Poling (1983) found that children with autism who could emit specific responses under tact control but were unable to emit the same response forms under intraverbal control. In this study they Braam and Poling transferred stimulus control between nonverbal discriminative stimulus and verbal stimuli. Miguel et al, (2005) demonstrated that Multiple-tact training (MTT is a method that involved teaching a child to name an item and it's category) and Receptive- discrimination training, (RDT is a method that involved teaching a child to select a picture card in the presence of a question from an experimenter regarding the item or the item's category) are successful methods for teaching tacting in all preschool children, however, these methods do not significantly increase intraverbal repertoires in typically developing preschool children. A transfer of stimulus control procedure (IVT-Intraverbal training) in a multiple baseline design across word categories was implemented along with MTT and RDT to demonstrate that MTT and RDT were insufficient at increasing intraverbal repertoires and intraverbal training IVT demonstrated greater or more substantial effects. All of these studies demonstrated results that coincide with

Skinner's 1957 analysis of verbal behavior and provide evidence for the functional independence of verbal operants.

CHAPTER 3

POPULATIONS OF THE PREVIOUS RESEARCH

Skinner's account of Verbal Behavior has grown in such popularity that various researchers have analyzed the publication of empirical studies citing Verbal Behavior and utilizing Skinner's verbal operants (Dixon et al, 2007; Dymond, O'Hora, Whelan, & O'Donovan, 2006; McPherson, Bonem, Green, & Osborne, 1984; Sautter & LeBlanc, 2006). McPherson et al. (1984) totaled the number of citations of Skinner's Verbal Behavior to be 836 from January 1957 to August 1983. Dymond et al. (2006) extended McPherson et al.'s (1984) data to demonstrate a total of 1,029 citations. Sautter and LeBlanc's (2006) citation analysis demonstrated that during the last 15 years, the majority of studies have focused on only the verbal operant of mands and tacts. Dixon et al, (2007) discussed the issue of the impact of Skinner's book being diminished if empirical studies in verbal operants continue to be restricted to similar populations and similar verbal operants.

While discussing Skinner's four elementary verbal operants and the exciting research on each operant, this author has already cited over forty research articles. In the fifty research articles, most included children and most included an atypical population. Dixon et al (2007) found that of the 99 total articles in their Verbal Behavior analysis 77 were conducted with an atypical population, 63 investigated, studied, analyzed children. Within the atypical classification population the majority of the subjects recruited in studies taken were in the autism or mental retardation population (Dixon et al., 2007). Dixon et

al, (2007); Dymond, O'Hora, Whelan, & O'Donovan, (2006); Sautter & LeBlanc, (2006) McPherson, Bonem, Green, & Osborne, (1984) and all demonstrated that Skinner's (1957) *Verbal Behavior* has made a major impact and long lasting contribution in the field of behavior analysis. Dixon et al.'s (2007) citation analysis demonstrated the extreme need for utilizing and furthering Skinner's (1957) *Verbal Behavior* in populations other than developmental disabilities and other than children.

In addition to applying these operants in populations with Autism and Developmental Disabilities, some researchers have manipulated verbal operants in other contexts. For example, When using the search term "Verbal Behavior" or any of the elementary verbal operants (mand, tact, echoic, intraverbal) only one publication was found in the Journal of Organizational Behavior Management. This article was published by Fox and Vansteelle (2010) and it was a discussion article on the impact Skinner's verbal behavior has had on the entire field of organizational behavior management. Fox and Vanstelle (2010) noted that the results of their review indicate that the conceptual framework provided in *Verbal Behavior* has had virtually zero impact on empirical research in the field of Organizational Behavior Management. In this discussion they also noted that commonly used interventions in OBM are performance feedback, praise, goal setting, training, and antecedents- which are all verbal or language- based interventions. They also noted that most behaviors OBM researchers target for change in today's society require the production and/or manipulation of verbal stimuli. S.C. Hayes et al. (2006) argued that "difficulties in addressing the effects

of verbal processes” (p. 3) could be responsible for the limited influence of behavior analysis in general and OBM in particular. Fox and Vanstelle (2010) conducted a search for all journal articles citing *Verbal Behavior* and then utilizing at least one verbal operant. These authors found that none of the articles found actually employed one of Skinner’s verbal operants as either a dependent or independent variable. Recommendations taken from this study indicated that OBM researchers and practitioners expand their influence in both corporate and academic settings since it is imperative that behavior analytic approaches to human language is incorporated in OBM research if OBM is going to evolve into an applied science.

CHAPTER 4 FURTHERING THE RESEARCH

Skinner's verbal operants made an easily recognized and large impact on the population of developmental disabilities on the population of children, but why are we stopping there? There are far too many limitations in behavior management interventions and a large need to follow behavior analytic research. Our research demonstrates that behavior management interventions utilize verbal operants on a daily basis to increase job performance, increase sales, and increase employees' pay.

SCENARIO 1: INCREASE JOB PERFORMANCE

Empowerment is another key element that is a "newer" yet still traditional business method of increasing revenue. Empowerment refers to increasing the spiritual, political, social, or economic strength of individuals and communities. Empowerment in the restaurant industry provides employees with the opportunities to make their own decisions with regards to tasks to increase their attitude and work performance within the workplace. Blanchard, Carlos and Randolph(1996) state that empowerment encourages people to gain the required skills and knowledge to overcome obstacles in their work environment and ultimately, help them develop within themselves as well as within society.

Blachard, Carlos, and Randolph(1996) created a framework for the capabilities of empowerment. They listed:

- The ability to make decisions about circumstances
- The ability to access information for decision-making

- Ability to consider various options from which to choose (not just yes/no, either/or.)
- Ability to exercise assertiveness in collective decision making
- Having positive-thinking about the ability to make change
- Ability to learn and access skills for improving personal/collective circumstance.
- Ability to inform others' perceptions through exchange, education and engagement.
- Involving in the growth process and changes that is never ending and self-initiated
- Increasing one's positive self-image and overcoming stigma
- Increasing one's ability in discreet thinking to sort out right and wrong

Wilkinson (1998) relates empowerment to attitudinal shaping. Wilkinson states that empowerment is the idea of which is to change the attitudes of workers and by doing this will make them work much harder rather than giving them any power or control. Thomas and Velthouse (1990) discuss the importance of empowerment on individuals and society in order to overcome a variety of environmental obstacles such as poverty and development as a country.

Many establishments utilize a number of different incentive programs to in hopes increase revenue. Often times establishments include an “employee-of -the-Month”. This employee might get the perk of having their picture in a magazine or they might receive a gift card. While this may be a great incentive for some it doesn't reinforce the behavior of working hard to product to customers. Also, many times the employee can only be the employee of the

month once so after they win they are out of the contest so the contest can no longer (assuming it was in the first place) maintain the behavior of working hard. This is a very popular program recognized in many organizations (Daniels, 2000). Many management books utilized in accredited organizational behavior management programs recommend the use of an Employee- of- the Month program (Clarkson, 2006; Cook, 2004, Finne & Sivonen, 2009; Glanz, 2002; Pritchard, 2007). Daniels (2009) conducted a survey with 77 employees across various businesses and not a single employee was able to name specific behaviors required to earn employee of the month. Johnson and Dickenson (2010) investigated the Employee of the month as an intervention for sustaining improved performance on a data entry task. In this experiment the incentive was 50 dollars for the winner. In all participants data demonstrated a slight increase in performance immediately following the program yet slight decreases in every participant prior to the conclusion of this study. Several participants even showed a slight decrease even more than their original baseline level! The results of this study indicated that Employee of the month programs do not sustain improved performance and may actually even demonstrate detrimental effects.

The idea of feedback as an intervention has been around for many decades. More often than not, the type of feedback given in a typical establishment is either feedback in the form of an aversive “correction”, in means of cutting hours on the next month’s schedule, or just alleviating that person from that job. It is rare for an employee to get appraisal and if one does it is typically

in the form of earning more hours, earning better shifts, and in very rare occasions possibly a pay raise. The issue with this in terms of feedback is that it is not automatic, not related to a specific performance measure, often times not individualized, not based off function, and often times do not increase future frequencies of any specific behavior.

Individual and group monetary incentive systems have been researched in both the laboratory and in applied settings. Many empirical studies have demonstrated higher level of performance with the use of monetary incentives than with hourly pay (e.g. Bucklin, McGee & Dickinson 2003; Frisch & Dickinson, 1990; Gaetani, Hoxeng, & Austin, 1985, Hollenback & DeLeo, 1980; Nebecker & Cooper, 1988; Wagner & Bailey, 1997.) Bucklin McGee & Dickinson (2003) examined the effects of feedback on an individual monetary incentive system utilized by computer. They found that individuals perform at higher levels with the incentive systems and perform at even higher levels when feedback supplemented the effects of incentives.

Balcazar et al (1985/86) found that feedback when used alone improved performance more consistently in 28% of the articles reviewed. Effects were much larger, however, when feedback was paired with other consequences of performance- related behaviors. When tangible rewards (e.g. money, food, gasoline) were combined with feedback, performance improved in 13 of their 15 participants. Scherrer and Wilder, (2008) conducted a study training cocktail servers to increase safe tray handling in the restaurant by providing skills

trainings on an ongoing basis to increase safe tray handling in their establishment. In this study the type of feedback was immediate, positive, measured, explained with purpose, and utilized immediately.

SCENARIO 2: INCREASE SALES

A continuous mission for managers and owners is to increase total sales. To a owner and manager it makes no difference if business is slow or if business is doing rather well, every business manager and owner would like to increase revenue. Interventions that have been used for increase revenue are often times not behavioral, technological, analytical, conceptually systematic, and often times these interventions are not effective.

From a traditional business model, many strategies have been implemented in an attempt to increase revenue including but not limited to marketing, advertising, a variety of incentive systems, and feedback(in various forms). One globally known strategy utilized is the use of marketing and advertising. There are a variety of different marketing and advertising methods including many at no cost to some that are highly expensive and risk taking. Word of mouth is a great method of advertisement. It is a common fact that one is more likely to try a new restaurant or auto repair shop if another person tells them they had the best food or impeccable service than if they didn't hear anything about the establishment at all. Another well known advertising strategy is to set your establishment apart from others in terms of architecture, colors, interior design, décor, theme, music, staff or any element that can peak a person's interest. Marketing the establishment in the community at social events

dispensing brochures and fliers, some include coupon incentives for their first visit or if they spend a specific dollar amount. Technology is a major form of marketing today via commercials on the television/radio, phone call, text message, email, facebook, twitter, LinkedIn, and groupon- just to name a few.

Very recent empirical studies found in the journals of Admap, Market Leader, International Journal of Advertising, Journal of Advertising Research and the International Journal of Market Research demonstrate trends in the marketing industry pushing for a behavior model. New research can be found on the use of these behavior models to explain and predict market structure, dynamics and brand health and choice (Sreeram et al. 2003). Statistics are now utilized to demonstrate causal relationships between marketing variables. A number of research in the these marketing journals discuss the power of choice. One research article conducted by Jackson and Houldsworth, (2010) discussed the effects on the motivation or impulsive decisions behind completing consumer surveys on covert behaviors (thoughts, feelings and attitudes) . The Marketing society has made great gains in producing empirical research studies to demonstrate significant difference by using operational methods, data collection, and by conducting statistical analysis. Perry and Johnston (2010) discussed behavioral economic research and the need and requirement for using objective measurements.

SCENERIO 3 : INCREASE EMPLOYEES' PAY

Restaurants are a driving force in today's economy by generating great tax revenue, providing jobs, providing for and giving back to communities.

According to the National Restaurant Association, in the year 2010 restaurants in Illinois employed 507, 500 people and registered 18.8 billion dollars in sales.

The National Restaurant Association's 2011 Restaurant Industry Forecast states that America's restaurant industry sales in 2011 will reach a record high of six hundred four billion dollars. These record sales show they have multiplied by three and a half percent since the year 2009. This source also indicates that 12.9 million individuals, one in every ten persons, are currently employed by one of the 960,000 restaurants in America. These numbers are great for our communities- especially during economic hardships.

Approximately 21 million people in the United States eat out at full service restaurants every day and 98 percent of those who eat out leave some type of voluntary sum of money known as a "tip" for the server who waited on them (Media Dynamics, 2001; Paul, 2001). This "tip" often represents 100 percent of servers' take home pay since taxes eat up most if not all of their hourly pay. This "tip" is very important to the two million waiters and waitresses who rely on tips to survive. Tips should not only be important to the server, but they should also be very important to the manager and bar owner (Lynn, 1996). Research indicates that when employees are happy at their job they show great job performance and that can also increase sales. Tips are a monetary incentive and great research has demonstrated the effects of monetary incentives on job performance. A manager could potentially study when each bartender or server earns tips and explain their results to the server/ bartender which is another form of positive reinforcement if that intervention increases future frequency of positive job

performance. Lynn (1996) conducted a study demonstrating the various non verbal and some verbal techniques a server can utilize to increase their tip size. Some of the tips in this study included greetings, smiles, writing at the top of the guest check book, saying thank you and these publishers correlated these behaviors with customer satisfaction.

CHAPTER 5 LIMITATIONS AND FUTURE RECOMMENDATIONS

Verbal Operants, especially in the form of mands and intraverbals, are not being considered when creating and implementing many interventions- especially those in the field of organizational behavior management. Our knowledge and use of verbal operants could be a very effective intervention used to increase a series of behaviors in an establishment including total sales, individual sales, job performance, and customer satisfaction.

Research on manding could be extremely useful to increase sales. If future research analyzed what customers are requesting daily (in restaurants, grocery stores, clothing stores, schools) sales could increase greatly. Even greater research should analyze the antecedents prior to a consumer manding. For example, research should follow the eye gazes of the consumers, the inventory, the inventory placements. Research could also include intraverbals to determine if sales increase when intraverbals are included. This could be very simple questions, "How is your day going today?" This research could help increase sales as well as customer satisfaction.

Skinner's verbal operants could also make feedback more effective. Feedback has become a standard intervention during the training process of a job and ongoing feedback related to sales has gained major attention in the field of organizational behavior management. Approximately 70 percent of Organizational behavior management interventions have used feedback alone or in combination with other interventions (e.g. Bucklin, Alvero, Dickinson, Austin, & Jackson, 2000; Balcazar, Shupert, Daniels, Mawhinney, & Hopkins, 1989).

Little research has demonstrated if Feedback in the form of an intraverbal would be even more effective. Future research should analyze the typical type of feedback given and determine what and how many intraverbals could be most effective in the workplace.

The knowledge and research regarding verbal operants could assist managers and business owners by increasing their own and their employees' job performance. Employees are often not manding for their incentives or the schedule of their incentives in their workplace. Skinner's verbal operants could be utilized in job performance by allowing employees to mand for their rewards and how they would like to receive their rewards. That simple exchange of information is often times not considered in the behavior management world. Often times, the typical or traditional non research based incentive systems (previously discussed) are put in place instead. Feedback in the form of an exchange of information regarding job performance could be, but isn't always an intraverbal. When giving feedback the research on intraverbals should be taken into account. How many exchanges, what exact phrases, and the function for each phrase for each the speaker and the listener should all be analyzed and researched to extend Skinner's verbal operants to organizational behavior management.

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VITA

Graduate School
Southern Illinois University

Meredith P. King

Meredithpaigeking@yahoo.com

Southern Illinois University Carbondale
Bachelor of Science, Communication Disorders of Sciences, May 2006

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Major Professor: Dr. Mark Dixon